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08/263,125	06/21/94	KATAYANAGI	K	SONYP4412

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EXAMINER
CHOWDHURY, I

ART UNIT	PAPER NUMBER
2308	3

DATE MAILED: 11/28/95

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

☑ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire __3__ month(s), __∅__ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I   THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. ☑ Notice of References Cited by Examiner, PTO-892.
2. ☑ Notice of Draftsman's Patent Drawing Review, PTO-948.
3. ☑ Notice of Art Cited by Applicant, PTO-1449.
4. ☐ Notice of Informal Patent Application, PTO-152.
5. ☐ Information on How to Effect Drawing Changes, PTO-1474.
6. ☐ _____

Part II   SUMMARY OF ACTION

1. ☑ Claims 1 - 22 are pending in the application.

   Of the above, claims _____ are withdrawn from consideration.

2. ☐ Claims _____ have been cancelled.

3. ☐ Claims _____ are allowed.

4. ☑ Claims 1 - 22 are rejected.

5. ☐ Claims _____ are objected to.

6. ☐ Claims _____ are subject to restriction or election requirement.

7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.

8. ☐ Formal drawings are required in response to this Office action.

9. ☐ The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).

10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____ has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).

11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).

12. ☑ Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has ☑ been received ☐ not been received ☐ been filed in parent application, serial no. _____ ; filed on _____.

13. ☐ Since this application apppears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.

14. ☐ Other

EXAMINER'S ACTION

PTOL-326 (Rev. 2/93)

Part III   DETAILED ACTION

Specification

1.   The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Objections

2.   Claims 1 and 21 objected to because of the following informalities:

a) In claim 1, line 6 "detecting noise domains" the examiner does not clearly see an explanation of what "noise domain" is in this claim or in the specification. A "domain" usually corresponds to a transformation into a set such as time domain to frequency domain. Please explain.

b) In claim 21, the claim depends on itself. Should this be dependent on claim 20 or some other claim?

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3.   Claims 1-22 rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As per Claim 1, limitation b) states a "noise domain detection means" yet the connection between this component and the rest of the system is not clear. Where is the "receiving apparatus" described or present in this claim? Is the "noise domain detection means" part of the receiving apparatus? Please clarify.

As per Claims 2-16, these claims incorporate errors from Claim 1 which they are dependent on.

As per Claim 7, lines 3 the phrase "the noise detection domain" lacks clear antecedent basis in that noise detection domain is not defined in this claim or a previous claim.

As per Claim 8, line 2 the phrase "said noise level detection means" lacks clear antecedent basis in that noise level detection is not defined in this claim or a previous claim.

As per Claim 17, line 1 the phrase "transmitting receiving apparatus" is vague and indefinite. Should this be "transmitting and receiving"?

As per Claims 18-22, these claims incorporate errors from Claim 17 which they are dependent on.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5.   Claims 1 and 17-22 rejected under 35 U.S.C. § 102(b) as being anticipated by Borth et al. (4,628,529).

As per Claim 1, Borth teaches

a) a speech signal transmitting encoding circuit comprising a microphone and other circuitry for compressing speech signals by digital signal processing at a high efficiency (his col 2 lines 1-14 and lines 50-58 in which after removal of noise the system is encoded and transmitted for digital cellular telephone system. A microphone is taught in Col 2, lines 1-14.);

b) noise domain detection means for detecting noise domains using analytic patterns produced by said speech signal transmitting encoding circuit (his col 3, lines 11-37 in

which analytic parameters correspond to signal-to-noise

ratio values and this parameter is used to determine if

amount of noise in channel is above threshold);

c) means for controlling the received sound volume

responsive to the noise level detected by said noise

domain detection means (his col 3, lines 11-18 "The

gain of these channels is then adjusted according to the

modification signal ... post-processed output speech

signal.").

As per Claim 18, Borth teaches detection of the speech level

entering said transmitting microphone of the transmitter directly

after turning on of a power source for talk transmission (this is

inherently taught in col 2, lines 1-14 for a cellular speaker

phone due to transient noise from the engine and other power

sources).

As per Claims 19 and 20, Borth teaches noise domain

detection means that detects the speech level entering said

transmitting microphone when the speech level in said receiver

exceeds a pre-set value and detection occurs at a pre-set time

interval in the standby state of said transmitter for signal

reception (his col 2, lines 1-31 "... used in relatively high

background noise environments requiring noise suppression levels

approaching 20 dB, there is a substantial degradation in voice

quality ... which provides sufficient background noise

attenuation ..." A standby state for cellular telephones is well

known in the telephone art.)

As per Claims 21 and 22, <u>Borth</u> teaches noise domain

detection means to detect the speech level entering said

transmitting when the speech level in said receiver exceeds a

pre-set value (his col 12, lines 67-68 and col 13, lines 1-13).

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. § 103 which forms
the basis for all obviousness rejections set forth in this Office
action:

> A patent may not be obtained though the invention is not
> identically disclosed or described as set forth in
> section 102 of this title, if the differences between the
> subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject
> matter pertains. Patentability shall not be negatived by
> the manner in which the invention was made.

> Subject matter developed by another person, which qualifies
> as prior art only under subsection (f) or (g) of section 102
> of this title, shall not preclude patentability under this
> section where the subject matter and the claimed invention
> were, at the time the invention was made, owned by the same
> person or subject to an obligation of assignment to the same
> person.

7.   Claims 2-16 rejected under 35 U.S.C. § 103 as being

unpatentable over <u>Borth et al</u> as applied to claim 1 above, and

further in view of <u>Gerson et al</u> ("Vector Sum Excited Linear

Prediction (VSELP) Speech Coding at 8KBPS").

As per Claim 2, <u>Borth</u> teaches noise domain detection means

for detecting noise domains using analytic patterns produced by

said speech signal transmitting encoding circuit and one frame

deemed to be a noise domain if parameter is smaller than preset

threshold (his Fig. 6b and col 12, 67-68 and col 13, lines 1-10

"current post-processed energy value exceeds a predetermined

noise threshold ... decision that only noise is present is made"

in which obvious modification to reverse inequality) but does not

show use of first-order linear prediction encoding coefficients

as analytic parameter for each frame. <u>Gerson et al.</u> shows use

of first-order linear prediction encoding coefficients as

analytic parameter for each frame (his Pg 1, left col, I.

Introduction "Vector Sum Excited Linear Prediction falls into the

class of speech coders known as Code Excited Linear Prediction"

which is type of linear prediction encoding and Fig. 1, left

col, 4th paragraph "second and third sources are from two VSELP

excitation codebooks ... two VSELP excitation codebooks.") in an

analogous art for the purpose of good coding performance at very

low data rates. It would have been obvious to a person of

ordinary skill in the art at the time the invention was made to

use linear prediction encoding coefficients as the analytic

parameter to determine whether a noise domain is present because

this achieves high speech quality while maintaining reasonable

complexity (Pg 1, left col, 4th paragraph).

As per Claims 3-4, 10 and 11, Gerson teaches noise domain

detection means employs a pitch gain indicating the intensity of

pitch components as the analytic parameter for each frame (his

Pg 1, left col, "II. Basic Coder Structure" in which "The first

is from the long term ("pitch") predictor state, or adaptive

codebook." and also Pg 4, section VII. "Adaptive Pre and

Postfiltering" teaches calculation of pitch gain. The comparison

of pitch gain within a pre-set range or equal to zero is given in

rejection to claim 2 above.)

As per Claims 5 and 12, Gerson teaches noise domain

detection means employs a frame power as the analytic parameter

for each frame (his Pg 3, sec. "V. Quantization of Excitation

Gains" in which a gain codebook is generated containing coded

speech energy "The first stage codes the average speech energy

once per frame." and Pg 3, right col, 1st paragraph "... gain

codebook which minimizes the total weighted error for the

subframe is chosen." and inequality is inequality is taught in

rejection to claim 2 above.)

As per claims 6, 7, 13, and 14, Gerson teaches if an amount

of change of the frame power between a current frame and a past

frame exceeds a pre-set threshold (his Pg 4, section "VI.

Optimization of the Basis Vectors", 1st paragraph "Since the

coder subframes are not independent, this procedure is iterated

in a closed loop fashion." which implies that subtraction is

being done between current and past iteration of the frame

energies. Determination of whether noise or speech domain is

taught in <u>Borth</u> as given in rejection to claim 1 above.)

As per Claims 8 and 15, <u>Gerson</u> teaches noise level detection

means performs filtering on a noise level output of the noise

domain detected by said noise domain detection means (his Fig 1

in which pitch prefilter synthesis filter and spectral postfilter

are present.)

As per Claims 9 and 16, <u>Gerson</u> teaches that the filtering

performed by said noise level detection means on the noise level

output is minimum value filtering (his Pg 4, left col, sec. "VII.

Adaptive Pre and Postfiltering" in which eqn 25 contains a min

function for pitch prefilter.)

Conclusion

8.   The prior art made of record and not relied upon is

considered pertinent to applicant's disclosure.

Rabiner and Schafer (<u>Digital Processing of Speech Signals</u>)

teaches pitch detection using LPC parameters.

<u>Pinckley</u> (5,146,504) teaches automatic gain control circuit

which uses frame power detector to determine power of each frame.

<u>Yang et al.</u> (5,432,859) teaches noise-suppression circuit

application of separate gains to separate bands and then

recombines them in a signal combiner to generate output signal in

which the noise has been suppressed.

9.   Any inquiry concerning this communication or earlier
communications from the examiner should be directed to Indranil
Chowdhury whose telephone number is (703) 305-3868.

If attempts to reach the examiner by telephone are unsuccessful,
the examiner's supervisor, Allen R. MacDonald, can be reached on
(703) 305-9708. The facsimile phone number for this group is
(703) 308-5356.

Any inquiry of a general nature or relating to the status of this
application should be directed to the Group receptionist whose
telephone number is (703) 305-9600.

ALLEN R. MACDONALD
SUPERVISORY PATENT EXAMINER
ART UNIT 2308

Indranil Chowdhury
November 12, 1995